Eat Fresh and Grow Jobs, Michigan

September 2006

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Michigan Land Use Institute

the c.s. mott group
for Sustainable Food Systems at MSU

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The **Michigan Land Use** Institute is an independent, nonprofit organization that conducts research and works with policymakers and citizens to help foster a new approach to economic development that respects the land, the communities that inhabit the land, and the inherent process of change. More at ***www.mlui.org***.

The Institute's **Entrepreneurial Agriculture Project** works to grow jobs, save farmland, and build healthier communities with food that's thousands of miles fresher. In addition to statewide policy advocacy, the project operates the eight-county ***Taste the Local Difference*** initiative in northwest Michigan. More at ***www.LocalDifference.org***.

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The **C.S. Mott Group** is a team of researchers and educators at Michigan State University working with people and communities to create a healthy future where sustainable Michigan farms feed Michigan people and Michigan people support these farms. More at ***www.mottgroup.msu.edu.***

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I. Executive Summary p. 2
II. Costs and Benefits p. 4
III. Recommendations p. 7
IV. Methodology p. 9
A. Calculations
B. Economic impact

Eat Fresh and Grow Jobs, Michigan

Study finds farms could generate up to 1,889 new jobs by selling more fresh produce

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I. Executive Summary

The following study explores the potential for changes in the marketing practices of Michigan's existing fruit and vegetable producers to improve the profitability of the state's valuable farmland, grow job opportunities across the economy, and improve public health. We have found, with the help of robust economic modeling tools, that a determined effort to increase fresh market sales of Michigan fruits and vegetables could significantly boost employment and personal income across the state. These benefits could be gained through a series of statewide initiatives that would have a modest cost and significant effect on Michigan's economy and the health of its residents.

Eat Fresh and Grow Jobs examines six different scenarios in which existing farmers double or triple the amount of fruits and vegetables they sell into fresh produce markets, such as wholesale grocery sales and farmers markets. Using an economic modeling tool customized to Michigan, we determined the shift could generate up to 1,889 new jobs across the state and $187 million in new personal income. This projection is conservative because it only looks at the jobs that farms would help generate across their communities by spending and investing their new, higher net incomes. A distinct possibility exists, however, that the proposed shift of more Michigan fruits and vegetables to fresh markets would generate still more jobs on farms and in related food marketing activities as new profitability draws entrepreneurs and stimulates innovation. This study acknowledges but does not analyze that possibility.

The 18-month study examined the job-building potential of helping Michigan farms sell more of their fruits and vegetables into fresh produce markets, both directly to consumers and wholesale to restaurants and grocery markets. The study's projections for new jobs and personal income are based on estimated net revenue gains to Michigan farms of up to $164 million. The reasons for exploring this expanded 'fresh-farm' focus are compelling:

- Currently 74 percent of Michigan fruits and 44 percent of its vegetables are sold at relatively low prices as ingredients for canned, frozen, dried, and other processed products.
- Much of the $1.9 billion of higher-value fresh fruits and vegetables consumed in Michigan comes from other states and countries.

- With the second-widest variety of farm products after California, Michigan farms can logically meet a broad range of fresh produce market demands.
- Michigan-grown fresh produce is gaining in competitive advantage through new consumer demand for locally grown food.

Potential market changes

Market	Estimated current share of MI production	Proposed share of MI production	Net gain to MI farms*
Fruit – Direct Market	0.5%	Up to 1.6%	$70 million
Fruit – Fresh Wholesale	25%	Up to 50%	
Vegetables – Direct Market	0.5%	Up to 1.6%	$81 million
Vegetables – Wholesale	56%	Up to 83%	
Potatoes-Direct Market	0.9%	Up to 2.6%	$13 million
Potatoes-Wholesale	24%	Up to 48%	
		Total increase**	**$164 million**

* Potatoes are considered separately because data on vegetables does not include potatoes and because Michigan potato growers are interested in their industry's specific results.
** Results account for an estimated 3.5 percent increase in marketing costs as farms move from processed to fresh sales and for the loss of income from processed markets after switching to fresh markets.

Economic Impact	Up to 1,889 jobs
	$187 million in new, personal income

Research team

The study is the first job-forecasting model for fresh foods in Michigan and one of the most comprehensive of its kind in the country. It is a collaborative effort of the W.E. Upjohn Institute for Employment Research, Michigan State University's C.S. Mott Group for Sustainable Food Systems, and the Michigan Land Use Institute's Entrepreneurial Agriculture Project. The study constructs a model of potential changes, using existing market data and the Regional Economic Models Incorporated (REMI) tool, which is customized to Michigan. (See Methodology).

II. Costs and Benefits

This study finds that as many as 1,889 jobs could result from farms earning and spending higher incomes after switching to more fresh markets. That's an important outcome for Michigan's economic development efforts. Nationwide economic development incentives for job creation can average $15,000 per job[1].

This study's projections could warrant an economic development investment of $9.5 million toward marketing Michigan foods and helping farms and related businesses supply more fresh markets, a modest $5,000 per potential job. That sort of investment could go a long way toward implementing this report's recommendations (Section III), many of which call for no- or low-cost changes in state government, from new coordination among agencies on food system goals to putting more emphasis on fresh market opportunities in existing programs for agriculture.

Moreover, the benefits from such an investment could extend well beyond this study's projection of as many as 1,889 new jobs from new farm spending. This analysis does not include additional potential results, such as new jobs in packing and marketing as entrepreneurs respond to new opportunities; protection of water quality and tourism assets as fewer farms go out of business and keep their land in agriculture; and lower long-term health care costs for struggling Michigan employers as efforts to market fresh Michigan fruits and vegetables combine with public health efforts to increase overall consumption of fresh and nutritious foods.

The experience of Michigan's asparagus industry, working with the state's pilot *Select Michigan* program in recent years, is a prime example.

Across the country, programs to support local farm marketing have proven to be effective at relatively low cost. The state's *Select Michigan* campaign, for example, was instrumental in 2004, with a lean budget of $291,650, in increasing sales of Michigan-grown commodities by 8.6 percent at Meijer and Spartan stores in Grand Rapids and Detroit. At the same time, industry average sales for the same commodities dropped 2 percent, according to an independent program evaluation.

The state's *Select Michigan* campaign is also a key reason for new profits and hope among Michigan's 350 asparagus farms and the communities they support. In just three years, with *Select Michigan* promotion a key element, Michigan asparagus growers went from selling about 5 percent of their crop to fresh markets in 2002 to fully 25 percent of their crop in 2005.

1 Estimate, W.E. UpJohn Institute economist George Erickcek.

That means more money to growers working 15,000 acres of farmland. Selling asparagus to fresh markets nets as much as a 20 percent premium. Asparagus farms that sell to processing markets have also benefited. Processors this year are paying nearly 30 percent more in part because the volume of Michigan asparagus available for processing is down from an oversupply that in past years pushed prices to farmers below their cost of production.

The Michigan Asparagus Advisory Board points to *Select Michigan* as a fundamental part of this success, which includes land staying in agriculture, a new crop of young farmers getting involved, new investments at existing farms and related businesses, and at least three new packing facilities devoted to fresh asparagus markets.

None of these outcomes is automatic; it takes producer commitment and business savvy to make the most out of *Select Michigan* marketing. Yet *Select Michigan* is an important long-term investment in helping Michigan agriculture capitalize on consumer demand for food produced nearby and on potentially significant changes in the industry, such as higher transportation costs for imported foods.

Michigan's 53,000 farms are poised to build more profitable businesses by responding to the fact that the state's large population (8th in the nation) is seeking more fresh foods. In fact, this growing demand for fresh local foods is one of the brightest spots on the horizon for Michigan agriculture. New market opportunities in this fresh, local segment range from restaurant chefs creating a competitive edge with the quality of fresh local tastes to school cafeterias working to improve children's diets. According to the Michigan Department of Community Health, increasing the availability of fresh, local foods in Michigan is a key ingredient of efforts to improve public health and the state's business climate. The Michigan Economic Development Corporation warns that healthcare costs are slowing economic growth and job creation.[2] Second only to smoking, poor diet and lack of physical activity is a leading cause of death in the United States.

With an improved economic outlook, it is also probable that farms will be less likely to sell farmland for development, which occurs now at a rate of 8 acres per hour as Michigan marches toward losing 71 percent of its farms in the 50- to 499-acre range by 2040.[3] Saving farmland reduces pollution from storm water that runs off of paved surfaces, which is the top threat to the state's water quality, according to the Michigan Department of Environmental Quality. It also helps the state's significant tourism economy by protecting views and quality of life.

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2 Michigan Economic Development Corporation news release on comparative health care costs: http://medc.michigan.org/news/major/archive/combo.asp?ContentId=240C5D4E-2DA8-4D76-A3ED-3997E06C39F0&QueueId=2&ContentTypeId=7. Complete study: http://medc.michigan.org/cm/attach/353CEBC8-18EA-4958-BAED-AF58DF8C33E9/MEDCFinalHCReport%203_31_04.pdf

3 Calculated from "Michigan Land Resource Project" (2001), Public Sector Consultants, Inc.

A key assumption of this study is implementation of a comprehensive statewide program to promote fresh Michigan produce. This program must be driven by marketing and promotion research, and capitalize on Michigan's sense of place. It would articulate both the direct personal benefits, such as fresh food and improved health, as well as the broad economic, environmental, aesthetic and social benefits that come with supporting Michigan agriculture. In other words, Michigan fresh produce would become a widely recognized brand, known both for its high quality and its integral relationship with the beauty and vitality of the state.

Such promotional efforts can work. In addition to positive results from the state's *Select Michigan* program, studies of generic food advertising show that promotional investments pay off in new farm profitability. Research into advertising campaigns for milk and eggs, for example, has shown that each advertising dollar generated more than $6 in farm profits.[4]

As demand for the Michigan brand grows, further efforts, as outlined in this report's recommendations, will be needed to ensure that the supply reaches markets throughout the state. We do not underestimate the difficulty and complexity of this task; rather, we challenge the state government, its public research institutions, and its citizens to prioritize this issue and recognize the vast untapped potential of our food system to be a driver of long-term and sustainable economic prosperity.

4 Schmit, Todd M., J. Carlos Reberte, and Harry M. Kaiser. "An Economic Analysis of Generic Egg Advertising in California, 1985-95." Agribusiness: An International Journal (forthcoming), http://commodity.aem.cornell.edu/nicpre/bulletins/rb0206/RB%202002-06.pdf; Measuring the Impacts of Generic Fluid Milk and Cheese Advertising: A Time-Varying Parameter Application, http://commodity.aem.cornell.edu/nicpre/bulletins/rb9905.pdf.

III. Recommendations

Achieving the study's projected potential of up to 1,889 jobs and $187 million in new personal income will require strengthening the ability of Michigan farms to deliver more fresh produce to a variety of markets. Such efforts would need to address several challenges:

- Packing and distribution systems are predominantly geared for national and global markets.
- Farms that have historically relied on processing markets may need modification for fresh markets; barriers include differences in crop varieties and the need for new storage and handling facilities.
- Michigan's population needs information concerning advantages of purchasing and consuming fresh Michigan-grown foods.

Recommendations for policy reform and programmatic support to achieve the study's projected outcomes fall into five categories: policy support, production, marketing, packing, and distribution. This list provides examples of proven action steps:

Policy

- Expand the popular and successful *Select Michigan* program statewide and develop a funding base that recognizes its economic development opportunities.
- Support establishment of a state farmer's market association to strengthen and coordinate promotional activities, develop effective market rules and regulations, and represent markets at local and state policy making levels.
- Encourage state agencies to work across departments on common food system goals and opportunities, such as increasing food stamp utilization at farmers markets.
- Proactively work to direct local and state government food purchasing to local food products, including cafeterias at schools, child care centers, higher education, and prisons through modified procurement practices and 'bonus point' provisions.
- Encourage public-private partnerships for such important functions as coordinated research, outreach and education, and other activities to increase public awareness of the value of Michigan farms and foods and to address challenges and opportunities. Partnerships include health industry promotion of local foods and tourism industry linkages to local farms.

Production

- Provide targeted market research to help farms plan and plant for a broad range of fresh market opportunities (e.g. ethnic foods).
- Support adoption of practices that will help farms serve and succeed in fresh produce markets (i.e. hand-harvesting, better-suited plant varieties).
- Link beginning farmers with retiring farms to keep land in farming.

- Support local and state efforts to protect farmland from suburban growth while protecting its asset value to farmers. Examples include town center development, urban redevelopment, and programs to purchase or transfer farmland development rights.
- Develop grants and low-interest loans to assist groups of producers adopting new technologies to extend their growing seasons.

Marketing

- Assist cooperative arrangements aimed at fresh produce markets, such as the successful Michigan Asparagus Growers Inc.
- Support development of farmers markets, on-farm farm stands, fresh produce buying clubs and urban grocery outlets.
- Build local food marketing campaigns that incorporate nutrition education and health care industry partnerships.
- Help campaigns development point-of-sale and other materials for local food promotion.
- Explore alternative marketing strategies in underserved areas, such as training community youth to market in 'youth farm stands.'
- Engage fruit and vegetable marketers to help ensure steady supply to meet new demand.
- Assist retailers in developing new ways to make Michigan produce attractive to consumers.

Storage and packing

- Prioritize research into improving post-harvest storage technology.
- Develop low-interest loans for cooling, appropriate storage, packaging, and other needed equipment.
- Invest in product research and development for packaging and presenting fresh produce in new ways, such as pre-washed lettuce and pre-cut greens.

Distribution

- Assist regional distribution ventures, such as strategic alliances between farm cooperatives and existing distributors.
- Support coordinated direct-market delivery, such as farms combining their supply and delivering local produce jointly.
- Encourage partnerships among community services, such as the distribution needs and resources of food pantries and local farms.

IV. Methodology

A. Calculations

To analyze changes in Michigan fruit and vegetable marketing, the first step is to quantify the existing landscape. In particular, the analysis must establish the current quantities of fruits and vegetables that farms sell for canning, freezing, drying etc. in processed markets and how much they sell in fresh fruit and vegetable markets. In addition, for the fresh markets we must determine how much farms sell wholesale fresh (W) and how much farms sell fresh in direct markets (DM), such as at farm stands, farmers markets, and other direct-to-consumer channels. Finally the analysis must determine the current prices and revenues farms receive when selling into each of these markets as a baseline against which to measure the effects of marketing changes.

The discussion below begins with a summary of data sources used. It then explains how we derived needed numbers from the existing data.

Data sources

Calculations of prices, quantities, and revenues are based on a combination of data, primarily from the National Agricultural Statistics Service, Michigan Field Office (NASS-MI). Whenever possible, we use data from 2004, the most current available.

Total revenue data is directly available from NASS-MI for fruits, vegetables, and potatoes (see Table 5). We consider potatoes separately because NASS does not include potatoes under vegetables and because interest in the potential of fresh market potato sales is high among Michigan growers.

Data on the proportions of pounds and sales dollars going to fresh versus processed markets are available for the major products under fruits and vegetables. We assume that the proportions calculated for the included products hold true for those minor products for which this data is not available. These and other data are the basis for estimates of the quantities sold and revenues gained by Michigan farmers selling to direct (DM), fresh wholesale (W), and processing (P) markets, which are not available directly from NASS data.

Calculation of direct market revenues

The total amount of direct market revenue to Michigan farms in 2002, according to NASS, was about $37 million. We assume that this figure grew by the same annual percentage from 2002-2004 as it did from 1997-2002 (about 4.1%), so we calculate direct market revenue in 2004 to be $40 million.

The proportion of these sales attributable to fruits and vegetables is not available from NASS. We therefore use a figure from the state of New York, which is similar to Michigan in many ways, including diversity of crops. In New York, about 30 percent of total DM food revenue is for fruit and another 30 percent for vegetables (New York Berry News 2003). Applying this to Michigan's total DM revenue of $40 million, we arrive at about $12 million in direct market revenue for fruit and another $12 million

for all vegetables (including potatoes, which are considered as vegetables in the New York data). To separate potatoes from other vegetables, we multiplied the annual per capita consumption figures for potatoes (ERS, 2005a) and other vegetables by their prices. These expenditure proportions (about 14% potato and 86% other vegetables) were multiplied by DM revenue for all vegetables to get DM revenue for potatoes ($1.6 million) and other vegetables ($10.4 Million).

Prices, quantities, and revenues

We use NASS-MI data to determine quantities and revenues of Michigan fruits and vegetables that go to processed markets (canning, freezing etc.), on one hand, and direct and wholesale fresh markets on the other. The data indicate that about 74 percent of the quantity and 58 percent of the revenue from Michigan fruit goes to processed markets and the rest to direct and wholesale fresh markets. For vegetables, about 44 percent of the quantity and 23 percent of the dollars go to processed markets and the rest to fresh markets, both direct and wholesale.

For potatoes, total revenue and quantities are available from NASS-MI, but proportions of processed versus fresh are not. We used rotational surveys conducted periodically by the Michigan Department of Agriculture in cooperation with USDA NASS to determine these proportions. According to the rotational survey data, 75 percent of Michigan potatoes go to processed markets and 65 percent of growers' revenue is from processed markets. We apply these proportions to total 2004 potato quantity and revenue figures from NASS-MI to determine amounts for overall fresh and processed markets.

Now, after establishing quantities and revenues for each product group – fruit, vegetables, and potatoes – we calculate prices for each by dividing total revenue per market by total quantity per market. Table 1 summarizes the results for each market, with price being a pooled price, or average per pound, for that market. Overall, fresh prices for fruits and vegetables tend to be more than double processed prices, while fresh potato prices are about 1.5 times higher.

Table 1. Quantities, revenues, and prices for fresh and processed markets – all three crops

Crop and market	Quantity (lbs)	Revenue ($)	Price ($/lb)
Fruit-Fresh	317,424,757	123,941,734	0.39
Fruit-Processed	919,995,534	172,747,266	0.19
Fruit-Total	1,237,420,291	296,689,000	0.24
Vegetable-Fresh	1,157,087,802	228,849,074	0.20
Vegetable-Processed	905,992,617	68,293,926	0.08
Vegetable-Total	2,063,080,419	297,143,000	0.14
Potato-Fresh	300,000,000	32,398,879	0.10
Potato-Processed	910,000,000	59,056,121	0.06
Potato-Total	1,210,000,000	91,455,000	0.07

Prices and quantities for direct and fresh wholesale markets

Given that this analysis looks at changes in both the direct and wholesale fresh markets, we must next break the total fresh market revenue, quantities, and prices down into the same figures for the two types of fresh markets: direct and wholesale.

We use the following two basic equations as our basis for these calculations:
Rd=Pd*Qd
Rw=Pw*Qw
Where R=revenue, P=price, Q=quantity and the subscripts d and w stand for direct and wholesale.

We consider the following information we already have and substitute values in the equations accordingly:

1. We can determine wholesale revenue by working with two numbers that we already have: total direct market revenue and total fresh market revenue. We subtract direct market revenue from total fresh revenue to arrive at wholesale fresh revenue. For example, direct market revenue equals about $12 million for fruit, so subtracting this number from total fresh revenue (almost $124 million) leaves about $112 million of wholesale fruit revenue.
2. To determine prices for direct and wholesale fresh markets, we consider USDA Economic Research Service (ERS, 2005) data that shows the farmer's share of retail food prices. The data show that retail food prices are five times higher than wholesale prices that farms receive for fruits and vegetables. Therefore we can make the following substitution: Pd=5*Pw. For potatoes this spread is only 1.5 times, so we substitute Pd=1.5*Pw for potatoes.
3. We can also re-write direct market quantity as total fresh quantity minus wholesale quantity, or Qd=Qf-Qw, where Qf is the total fresh market quantity. In the case of fruit, total fresh quantity is 317 billion pounds, so direct market quantity can be expressed as 317 billion – Qw.

Now we can rewrite the two base equations, with unknowns in bold, as:
Rd = Pd*Qd = 5***Pw***(Qf-**Qw**)
Rw=**Pw*Qw**

By solving for Pw in each equation and setting them equal to each other, we can solve for Qw and substitute this number into the equations to solve for all unknowns.

Tables 2-4 give the results of these calculations, which researchers then used in the economic modeling tool to analyze changes in Michigan fruit and vegetable marketing.

Table 2. Summary of fruit quantities, prices, and revenues for each market

Market	Quantity (lbs)	Price ($/lb)	Revenue ($)
Direct	6,693,489	1.80	12,051,217
Wholesale	310,731,267	0.36	111,890,517
Processed	919,995,534	0.19	172,747,266
Total	1,237,420,291	0.24	296,689,000

Table 3. Summary of vegetable quantities, prices, and revenues for each market

Market	Quantity (lbs)	Price ($/lb)	Revenue ($)
Direct	10,913,921	0.95	10,400,393
Wholesale	1,146,173,881	0.19	218,448,682
Processed	905,992,617	0.08	68,293,926
Total	2,063,080,419	0.14	297,143,000

Table 4. Summary of potato quantities, prices, and revenues for each market

Market	Quantity (lbs)	Price ($/lb)	Revenue ($)
Direct	11,713,611	.14	1,653,453
Wholesale	326,716,141	.09	30,745,425
Processed	1,026,570,248	.06	59,056,121
Total	1,365,000,000	.07	91,455,000

Table 5. Summary of data sources and key calculations

Figure	Fruit	Vegetable	Potato
Total DM food revenue in MI, 2002 ($)	37,269,000 NASS Census of Agriculture (2002)		
Total revenue, all markets ($)	296,689,000 NASS-MI (2005b)	297,143,000 NASS-MI (2005b)	91,455,000 NASS-MI (2005b)
Processed revenue proportion	.58 NASS-MI (2005a) (derived)	.23 NASS-MI (2005c) (derived)	.65 NASS-MI (2002) (derived)
Processed quantity proportion	.74 NASS-MI (2005a) (derived)	.44 NASS-MI (2005c) (derived)	.75 NASS-MI (2002) (derived)
Ratio of direct to wholesale price	5.0 ERS (accessed 2005)	5.0 ERS (accessed 2005)	1.5 ERS (accessed 2005)

B. Economic impact

To project the economic impact of farms selling two and three times more Michigan fruits and vegetables into direct and fresh wholesale markets, we must take stock of necessary market conditions and state assumptions for the analysis. Then we can put calculations of prices, quantities, and revenues with assumptions into an economic modeling impact model developed for the W.E. Upjohn Institute by Regional Economic Models Incorporated (REMI) and customized to Michigan.

Necessary market conditions

The earning potential for farmers to expand their sales in fresh and direct markets depends upon the following two market conditions:

1. The *elasticity* of demand for fresh or direct market fruits and vegetables; that is, the extent to which changes in price affect the quantity that consumers demand.
2. The change in the *level* of consumer demand for fresh or direct market fruits and vegetables; that is, how marketing efforts, for example, can increase (shift) the overall quantity consumers demand at any given price.

Charts 1 and 2 illustrate the combinations of demand elasticities and shifts in consumer demand that would generate greater revenue for Michigan's vegetable and fruit farmers. The charts point to the percent of sales that would have to come from increasing, or shifting, demand. Under both scenarios, it is assumed that farmers would double their current shipments of produce to fresh and direct markets.

Price changes can cause small and large changes in quantities that consumers demand, depending on how sensitive this demand is to price (elasticity). To ensure profitability, farms must offset effects of elasticity by shifting consumer demand in some way, such as through marketing programs that can increase quantities demanded at any price. For example, we can logically expect prices for fruits and vegetables to fall as supply rises, leaving farms with less revenue and squeezing profits. This analysis takes this into account by estimating the shift in demand that would be required to help farms keep revenues at profitable levels given different price elasticities. Such a demand shift assumes increased demand for and availability of Michigan produce as a differentiated product with attributes, such as locally grown, which are desirable to consumers.

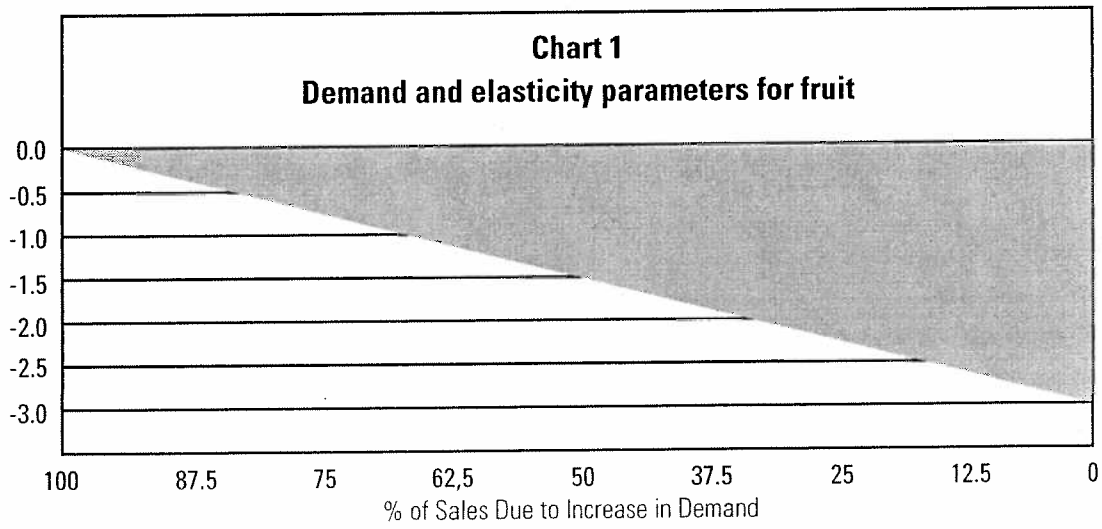
In Chart 1, the horizontal axis shows the extent of demand shift that needs to take place, or the percent of sales that will be due to new demand, to offset changes in quantities that consumers demand as prices change (elasticity). For example, fruit farmers facing relatively sensitive demand, such as -1.0 elasticity (a 1 percent decrease in price causes a directly proportional 1 percent increase in quantity) must shift demand by approximately 60 percent in order to make money when expanding the quantity of produce taken to direct and fresh wholesale markets. This is because, without the shift, the farmers' overall revenue from DM and fresh markets would remain unchanged even though they are selling more; the price would fall and they would lose the revenue they originally earned from selling to a processor. If the demand for direct and fresh wholesale fruits and vegetables is very sensitive, such

as a high elasticity of -3, then farmers do not need to worry about a shift in demand to generate new customers and increase revenues. The flat, highly elastic demand curve shows that an increase in supply reduces prices only a fraction and generates a large increase in quantity demanded.

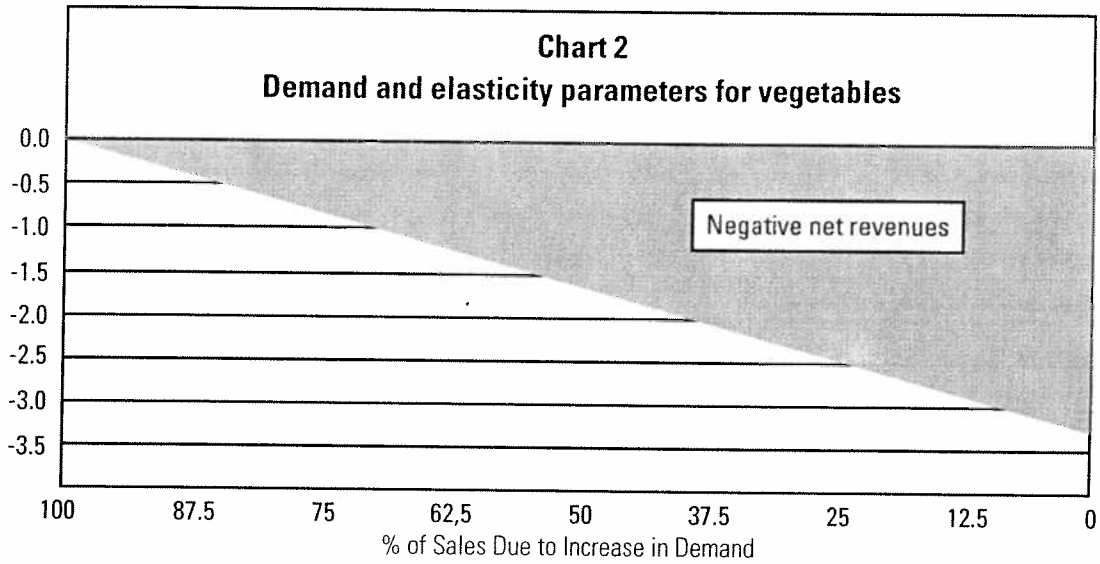
Unfortunately, research suggests high elasticity is not the case in fresh produce markets. According to You, Epperson, and Huang, farmers face an inelastic demand for fresh and direct produce.[5] This means that if farmers truck higher quantities of fruits and vegetables to direct or fresh markets, prices will quickly fall unless there is, at the same time, an increase in the demand — a shift in the demand curve — for produce sold in the direct and fresh wholesale markets. According to the charts below, if the demand for fresh and direct market vegetables and fruits is indeed highly inelastic, say -0.5, then approximately 80 percent of all sales must be the result of a demand shift in the marketplace.

In short, for farmers the old adage, "build it and they will come" is not true for increasing their revenues by selling more of their produce to fresh and direct markets. "If they will come—an increase in demand—then it will be built" is more correct.

This study uses three separate assumptions of the percent of sales that will be due to new demand (90%, 95% and 100%), which amounts to new customers or existing customers buying more at the same price.



5 Zhikang You, James E. Epperson, and Chung L.Huang, "Consumer Demand for Fresh Fruits and Vegetables in the United States" The Georgia Agricultural Experiment Stations, College of Agricultural and Environmental Sciences, University of Georgia, Research Bulletin No. 431, January 1998.



Potential economic impact under favorable conditions

Using an economic impact model for the state of Michigan, we estimate that under the right market conditions, farmers can substantially increase their revenues and generate a sizeable economic impact on the state's economy by switching to selling to direct and fresh markets. This analysis is based on the following assumptions:

1. We assume the elasticity of demand for both direct and fresh wholesale market sales of fruits and vegetables is relatively inelastic at 0.3 percent; that is, a 10 percent reduction in price will only cause a 3 percent increase in quantity sold.
2. No change in total production of Michigan fruits and vegetables. The analysis ignores the potential for new profitability to draw new farmers and/or production into fruit and vegetable markets. We assume increases in revenues will be earned by existing farmers only and will not, in the short-term, expand the state's agricultural production.
3. It is further assumed that the increase in revenues will not affect farming practices in the short-term. Farmers would be getting paid more for what they produce. A more complete analysis would incorporate the long-term effects of such a change in revenues, which could include an expansion in farming activity and any increase in costs associated with an expansion, such as higher labor costs and greater property values for farms.
4. The net cost to farmers of switching from selling to a processor to selling to direct markets and fresh wholesale markets is confined to a 3.5 percent marketing cost estimate. Building on results of a study from New York State[6] we assume 3.5% of direct marketing revenues go to increased costs of marketing. We ignore all additional costs, if any, associated with producing and marketing vegetables and fruits for fresh and direct markets rather than for a processor.

6 Uva, W. L. 2002. An Analysis of Vegetable Farms' Direct Marketing Activities in New York State. Department of Applied Economics and Management, Cornell University, Research Bulletin 2002-03. Uva finds that average marketing budget equals 3.1% of sales revenue.

5. The price offered by processors would not change due to the decision of some Michigan farmers to switch a proportion of their crop to direct and fresh wholesale markets. It is assumed that processors draw from a multi-state region and face a highly elastic supply curve. [Note: If we assume the reverse, that the prices processors pay for Michigan fruits and vegetables increase with a decline in supply, then farms would earn even more money by directing fruits and vegetables to direct and fresh wholesale markets. The remaining supply they sell to processors would generate more income.]
6. The revenue gains are the farmers' alone and are generated solely due to the price difference between fresh and direct markets and those offered by the processor. No additional jobs or income are generated in marketing, trucking, or cultivating produce to the new markets. In addition, we assume that the state's fruit and vegetable processors will not be affected by the farmers' actions.

As shown in Table 6 in scenarios 1, 3, and 5, farmers double the quantity of fruits and potatoes they take to fresh and direct markets at the expense of previous sales to processors. In these scenarios, farmers double the quantity of vegetables going to direct markets and increase by 1.5 fold the amount going to fresh wholesale markets. In scenarios 2, 4, and 6, they triple the amount of their current level of both fruits and potatoes going to direct markets, while doubling the volume going to fresh wholesale markets. Similarly, in scenarios 2, 4 and 6, farmers triple direct sales of vegetables and increase fresh wholesale sales 1.5 fold. These alternative sales quantities are matched with three separate assumptions of the percent of sales that will be due to new demand (90%, 95% or 100%) — new customers or existing customers buying more at the same price.

Table 6. Assumptions used in each scenario

Scenarios	Multiplier of current sales (x times current amt.)						% of Sales to new demand	
	Vegetables w/o Potatoes		Fruit		Potatoes			
	Direct	Wholesale	Direct	Wholesale	Direct	Wholesale	Direct	Wholesale
1	2	1.5	2	2	2	2	90	90
2	3	1.5	3	2	3	2	90	90
3	2	1.5	2	2	2	2	95	95
4	3	1.5	3	2	3	2	95	95
5	2	1.5	2	2	2	2	100	100
6	3	1.5	3	2	3	2	100	100

* Note: a market cost of 3.5% is taken from total sales. Elasticity of demand is 0.3 in all 3 markets

The resulting new net revenue to farmers will affect the state's economy through purchases by farmers for business and household-related expenditures. To estimate the effect of farmers earning greater revenues we used the REMI model, which is especially designed to estimate the economic impact of changes in the state of Michigan. It contains three separate components that together capture the resulting total impact to the local economy due to a change in employment. These components are:

- An input-output model that estimates the impact on the local economy of changes in inter-industry purchases. This component of the model captures the impact of an increase in orders to local suppliers of goods and services as well as the impact of households increasing their purchases of consumer goods and services.
- A relative wage component that estimates the impact of the expected changes in the area's cost structure due to changes in economic activity. For instance when a major employer moves into the area, it can cause wages to increase across most all industries due to the increased demand for workers and other local resources. This boost in wages, while generating additional consumption expenditures, increases the cost of doing business in the area, making the area slightly less attractive to other industries.
- A forecasting and demographic component that forecasts the resulting changes in future employment and population levels due to a change in economic activity.

The employment impact of these six scenarios is shown in Table 7, and the income impact is shown in Table 8. As can be viewed in table 7, the potential economic impact of farmers increasing the amount they sell fresh, direct, or wholesale, depends greatly upon the ability to generate new demand. If 90 percent of the new supply is purchased by new customers or existing customers buying more at the same price, then the employment impact ranges from 90 to 165 new jobs statewide (scenarios 1 and 2). If a highly effective marketing campaign were to shift demand significantly, however, all of the increase in supply of fresh wholesale and direct market produce is purchased by new demand at the same price. In this case (scenarios 5 and 6), the employment impact would be much larger, ranging from 1,652 to 1,899 jobs.

Table 7. Employment impact of the different scenarios

Employment Impacts						
Scenarios:	1	2	3	4	5	6
Forestry, Fishing, Other	0	0	1	1	1	2
Mining	0	0	0	0	0	0
Utilities	1	0	4	4	8	9
Construction	12	7	55	58	125	143
Manufacturing	6	3	26	28	59	68
Wholesale Trade	4	2	19	20	43	49
Retail Trade	38	21	167	177	379	434
Transportation, Warehousing	2	1	7	8	16	19
Information	2	1	10	11	23	27
Finance, Insurance	8	4	34	36	77	88
Real Estate, Rental, Leasing	5	3	21	22	48	55
Professional, Tech Services	7	4	29	31	66	75
Management of Co, Entertainment	1	1	5	5	10	12
Admin. Waste Services	7	4	32	34	73	84
Educational Services	5	3	22	24	51	58
Health Care, Social Asst	15	8	68	72	155	177
Arts, Entertainment, Recreation	6	3	26	28	59	68
Accommodations, Food Services	25	14	112	118	254	290
Other Services (ecl Gov)	18	10	81	86	183	209
Public Admin Emp (Thous)	2	1	9	9	20	23
TOTAL	165	90	728	772	1,652	1,889

Table 8. Personal income impact

Scenarios:	1	2	3	4	5	6
(Thousands of Dollars)						
Direct Farm Income	$12,024	$7,856	$63,227	$66,995	$143,213	$163,721
Wage & Salary Disbursements	$4,288	$2,319	$18,740	$19,840	$42,390	$48,480
Proprietor Income (non-farm)	$3,866	$796	$6,343	$6,725	$14,287	$16,379
Total Labor & Proprietor Income	$20,200	$11,020	$88,330	$93,580	$200,000	$228,600
Social Insurance Contribution	-$668	-$362	-$2,916	-$3,086	-$6,598	-$7,544
Net Residential Adjustment	-$311	-$167	-$1,228	-$1,293	-$2,709	-$3,089
Dividends, Interest & Rent	$95	$53	$427	$454	$977	$1,118
Transfer Payments	-$435	-$237	-$1,926	-$2,041	-$4,368	-$4,993
Personal Income	***$18,890***	***$10,280***	***$82,670***	***$87,620***	***$187,300***	***$214,100***
Personal Taxes	-$2,411	-$1,312	-$10,550	-$11,180	-$23,890	-$27,310
Disposable Personal Taxes	$16,480	$8,972	$72,140	$76,420	$163,400	$186,800

Key limitations and assumptions of this study

It is important to note that this study assumes no new production of fruit or vegetables. Acreage and yields are assumed to remain at 2004 levels. It is reasonable to expect that, to some extent, the increased demand for fresh local produce will encourage new acreage, either in the form of new farmers or diversions of acreage from relatively low value commodity field crops. Changes in revenue due to increased production are not modeled in this study; therefore, this study is likely a conservative or lower bound estimate of economic impacts. Although a word of caution must be said: the increase in production would have to be matched by an additional increase in demand or prices could drop dramatically.

Furthermore, it is reasonable to assume that transitioning from processed to fresh markets may incur increased costs for farmers, e.g., in harvest, cooling or other handling. The magnitude of these costs is not the subject of any study we know of and is difficult to forecast in a meaningful way without extensive empirical research. We are confident that at worst, these costs are offset by the gains from new production discussed above.

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The Michigan Land Use Institute Proudly Presents:

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Your doorway to *Taste the Local Difference*, a project dedicated to prosperous farms, fine food, and the local economy.

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Taste The Local Difference®

SELECT NORTHWEST MICHIGAN

A PROJECT OF THE MICHIGAN LAND USE INSTITUTE

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- Michigan Land Use Institute
- Michigan Small Business and Technology Development Center
- Michigan State University
- MSU Extension
- Northern Lakes Economic Alliance
- Northwestern Michigan College
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MICHIGAN LAND USE INSTITUTE

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PROBLEM: Endangered Farms

The two main forces driving Michigan farm families off of their land are unchecked sprawl, which makes farmland expensive to buy and easy to sell, and a super-sized food system that leaves no profit for small and medium-size operations. We must address both problems to save farmland and strengthen urban and rural communities. In 2002, the Michigan Land Use Institute, which has long promoted farmland protection, launched its *Entrepreneurial Agriculture Project* to promote farm profitability, as well. The project is increasing the attention that local and state leaders pay to farm business opportunities and community food systems, keys to developing new markets for farms caught on the global, bulk-food treadmill.

SOLUTION: Entrepreneurial Agriculture

To thrive, small and medium-size farms must develop market-savvy operations that grow, process, and market products in ways that respond to the many preferences consumers have — from demand for fresher local flavors and regional specialties to organic and humane farming practices. A new world of opportunity is opening up for family farms, according to economic development experts, as a few mass markets give way to huge numbers of new niche markets. To shift with consumer tastes and earn more by diversifying their operations, farmers need the business development assistance that traditional businesses enjoy.

ACTION: Select Northwest Michigan

The Institute is working with community leaders in northwest Michigan to:

- Link families, chefs, grocery stores, and others to local foods with its *Taste the Local Difference* campaign.
- Bring local foods to schools and other cafeterias.
- Help local farms identify and capitalize on new local and regional market opportunities.

You can learn more about project achievements and activities at ***www.LocalDifference.org*** or by visiting with members of the *Taste the Local Difference* Farm Network Team.

Planting Instructions for Seeds of Prosperity!

From the Michigan Land Use Institute

Here are some things local and state leaders can do to enhance the power of Michigan food to grow jobs, build health, and protect land.

GROW JOBS

With some business development help, Michigan's farms could sell many more products to local markets—and significantly boost the state's economy. A recent Michigan study found that a robust effort to increase sales of fresh, local fruits and vegetables alone could increase net farm income by nearly 16 percent and grow up to 1,889 new jobs. (See *Eat Fresh and Grow Jobs* at www.mlui.org)

To grow more food-powered jobs, local and state leaders should:

Launch, support, or expand local-food marketing efforts.
Just helping buyers find fresh, local farm products, so they can try them, makes a big difference. Growers have had great results from Northwest Lower Michigan's *Taste the Local Difference* farm food guide and the state's *Select Michigan* branding and promotion program.

Establish incentives and other assistance for smaller-scale food processors.
Smaller farms supplying free-range steaks and organic chicken can't keep up with growing demand because Michigan leaves meat processing inspections to expensive, distant federal regulators. Resuming state meat inspection services can pay off, as it has for other states, in new businesses, sales, and jobs.

Make sure our government buys Michigan-grown and -processed foods.
Set goals, help food services work fresh products into their prepared-food menus, help buyers find and expand local-food channels, and work with community groups—from culinary schools to local-food promoters like the Greater Grand Rapids Food Systems Council, the Food System Economic Partnership, and *Taste the Local Difference*—with food assistance efforts.

Support local growers, distributors, and processors with business development.
Grow more Michigan markets by lending small-business assistance to local-food entrepreneurs, assisting transitions to new growing practices and products, and encouraging new industry alliances like the emerging state farmers market association or Northwest Michigan's local food distribution initiative.

BUILD HEALTH

Getting more people to eat more fresh, local foods can improve public health, says the Michigan Department of Community Health. Healthier people improve the state's business climate, says a Michigan Economic Development Corporation report linking high healthcare costs to slow job creation.

To help Michigan farms build our health, local and state leaders should:

Develop financial and other initiatives to bring fresh food to low-income areas.
Thousands of Michigan's urban residents are stranded in "food deserts," with nothing nearby but junk-food-packed convenience stores. Yet these residents have the money to support local grocery stores. Officials can overcome grocery redlining with incentives for store development and neighborhood fresh-food projects.

Connect more farmers markets and other food retailers to assistance programs.
Michigan can expand federal coupon programs like Project FRESH and Senior Project FRESH, which help families buy food from local farms. Officials can help more markets adopt the programs and leverage more dollars into them. Leaders can also help markets install Electronic Benefits Transfer (EBT) card systems and increase farm participation in emergency food programs, such as the Michigan Agricultural Surplus System.

Make it easier for school food service departments to buy local products.
Improving school food through farm-to-cafeteria programs can improve child health and eating habits. Kitchen staff need help finding local-food suppliers and switching to fresh ingredients. Flexible bidding rules that make allowances for local vendors are vital, as are educational opportunities like farm fieldtrips for students.

Include gardening in educational and community development projects.
From Head Start to urban revitalization, redevelopment efforts now use community gardens to grow healthy, homegrown food for children, parents, and neighbors. When leaders provide land, water, benches, and nutritional education, kids learn gardening, budgeting, marketing, and business development.

PROTECT LAND

How Michigan's 53,000 farmers take care of the nearly 30 percent of Michigan land that they own affects many vital economic and cultural resources, from water quality and wildlife habitat to recreation and tourism.

To help Michigan farms protect our land, local and state leaders should:

Make preserving farmland and attracting new farmers economic priorities.
The state should establish farmland preservation goals and permanent funding for them, and spend at least 10 percent of the money on new farm business development, farmland affordability, and "new farmer" programs that include immigrant and migrant groups.

Reward farms that improve their environment.
Encourage and reward farms that not only protect, but also actively restore and expand their natural resources—from wetland and wildlife habitat improvements to soil-building organic practices and other techniques that render highly marketable products. The federal Conservation Security Program is a model.

Discourage farming practices that threaten natural resources and human health.
The industry generally accepts massive waste storage and sub-therapeutic antibiotic feeding at confined animal feeding operations, but health officials, neighbors, and others point to costly pollution problems and public health dangers. Officials must enforce environmental laws and determine how agricultural research, education, and other resources may promote practices that are proving harmful—and increasingly unpopular with consumers.

Encourage rural and urban farming with innovative zoning.
Most zoning does not picture farms as places for city folks to buy foods, pet goats, and purchase products made onsite, such as wine, juices, or cheese. These activities help farms prosper, so rural zoning must allow for reasonable amounts of retail, tourist, and cottage industry activities. Meanwhile, urban communities can make room for farmers markets, market gardens, and other opportunities for people to get closer to farms and fresh food.

Resources for more information:
Michigan Food Policy Council recommendations
http://www.michigan.gov/mfpc

Eat Fresh and Grow Jobs report on the economic growth potential of increasing sales of Michigan fresh fruits and vegetable in fresh produce markets.
www.mlui.org/downloads/EatFresh.pdf

The national Farm and Food Policy Project declaration on federal farm bill reform, which is applicable to local and state level policy, as well.
http://www.farmandfoodproject.org/